

**REMARKS/ARGUMENTS**

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1, 2, 4-8 and 10-25 are pending in the present application. Claims 3 and 9 have been canceled and claims 1, 5, 7, 8, 12, 14 and 20 have been amended by the present amendment.

In the outstanding Office Action, claims 8-16 and 20-22 were rejected under 35 U.S.C. § 102(e) as anticipated by Ozuktruk et al.; claims 17-19 and 23-25 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ozuktruk et al. in view of Petranovich; claims 1, 2 and 4 were rejected under 35 U.S.C. § 102(b) as anticipated by Petranovich; and claims 3 and 5-7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Petranovich in view of Ozuktruk et al.

The present invention currently includes independent claims 1, 8, 14 and 20. For example, independent claim 1, which has been amended to include subject matter similar to that recited in independent claim 3, is directed to an apparatus for estimating phase information including a matched filter that outputs converted synchronization signals, based on received data, and converted information of the received data. Further, the converted information includes converted phase values (cosine A and sine A) of a received pilot signal. Independent claims 8, 14 and 20 include similar features in a varying scope.

In a non-limiting example, Fig. 4 illustrates a matched filter 10 which outputs converted synchronization signals (locked position and locked energy) based on received data and outputs

converted information of the received data. The converted information includes converted phase value (cosine A and sine A) of a received pilot signal. Note that in the related art of Fig. 2 of the present invention, the matched filter 110 does not output converted phase values.

Thus, according to the present invention, the converted phase values of the pilot signal, outputted from the matched filter, is used for extracting phase information. Thus, it is possible to reduce the length of the pilot signal to be transmitted for outputting an average value of a predetermined size as shown in Fig. 3, for example (see paragraphs [30] and [31], for example).

Regarding the subject matter recited in dependent claim 3 (and dependent claim 9), the Office Action relies on Ozuktruk et al. as disclosing this feature and cites col. 54, lines 1-8. However, it is respectfully noted this section merely indicates the VCO is a pure summation, accumulated phase error +, which is converted to the complex phasor  $\cos \varnothing + j \sin \varnothing$  using a look-up table in memory. This does not correspond to the claimed converted information including converted phase value (cosine A and sine A) of a received pilot signal.

Accordingly, it is respectfully submitted independent claims 1, 8, 14 and 20 and each of the claims depending therefrom are allowable.

Further, the specification and abstract have been amended to correct minor informalities. It is believed no new matter has been added.

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**CONCLUSION**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, Daniel Y.J. Kim, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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